

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A method for the heat treatment of solids containing iron oxide, in which fine-grained solids are heated to a temperature of about 450 to 950°C in a fluidized-bed reactor (1), ~~characterized in that~~ wherein a first gas or gas mixture is introduced from below into a mixing chamber region (7) of the reactor (1) through a preferably central gas supply tube (3), the gas supply tube (3) being at least partly surrounded by a stationary annular fluidized bed (10) which is fluidized by supplying fluidizing gas, and ~~that~~ the gas velocities of the first gas or gas mixture and of the fluidizing gas for the annular fluidized bed (10) are adjusted such that the Particle-Froude-Numbers in the gas supply tube (3) are between 1 and 100, in the annular fluidized bed (10) between 0.02 and 2, and in the mixing chamber (7) between 0.3 and 30.

2. (Currently Amended) The method as claimed in claim 1, ~~characterized in that~~ wherein the Particle-Froude-Number in the gas supply tube (3) is between 1.15 and 20, in particular about 10.6.

3. (Currently Amended) The method as claimed in claim 1 ~~or 2,~~ ~~characterized in that~~ wherein the Particle-Froude-Number in the annular fluidized bed (10) is between 0.115 and 1.15, in particular about 0.28.

4. (Currently Amended) The method as claimed in ~~any of the preceding claims, characterized in that~~ claim 1, wherein the Particle-Froude-Number in the mixing chamber (7) is between 0.37 and 3.7, in particular about 1.1.

5. (Currently Amended) The method as claimed in ~~any of the preceding claims, characterized in that~~ claim 1, wherein the bed height of solids in the reactor (1) is adjusted such that the annular fluidized bed (10) at least partly extends beyond the upper orifice end of the gas supply tube (3) and ~~that~~ solids are constantly introduced into the first gas or gas mixture and are entrained by the gas stream to the mixing chamber (7) located above the orifice region of the gas supply tube (3).

6. (Currently Amended) The method as claimed in ~~any of the preceding claims, characterized in that claim 1, wherein~~ iron-oxide-containing ore, in particular iron ore or iron ore concentrate is used as starting material.

7. (Currently Amended) The method as claimed in ~~any of the preceding claims, characterized in that claim 1, wherein~~ the fluidizing gas introduced into the annular fluidized bed (10) of the reactor (1) is a preheated reduction gas which contains at least 80 % hydrogen, in particular more than 90 % hydrogen.

8. (Currently Amended) The method as claimed in claim 7, ~~characterized in that wherein~~ the reduction gas is cleaned in a reprocessing stage (31, 32, 33, 34, 35) downstream of the reactor (1) and is subsequently recirculated to the reactor (1).

9. (Currently Amended) The method as claimed in ~~any of the preceding claims, characterized in that claim 1, wherein~~ downstream of the reactor (1) another fluidized-bed reactor (23) is provided, whose exhaust gases are separated from solids in a separator (27) and are introduced into the gas supply tube (3) of the reactor (1).

10. (Currently Amended) The method as claimed in ~~any of the preceding claims, characterized in that claim 1, wherein~~ upstream of the reactor (1) at least one preheating stage (12, 13, 14, 15) is provided for heating the solids.

11. (Currently Amended) A plant for the heat treatment of solids containing iron oxide, in particular for performing a method as claimed in ~~any of claims 1 to 10, claim 1,~~ comprising a reactor (1) constituting a fluidized bed reactor, ~~characterized in that wherein~~ the reactor (1) has a gas supply system which is formed such that gas flowing through the gas supply system entrains solids from a stationary annular fluidized bed (10), which at least partly surrounds the gas supply system, into the mixing chamber (7).

12. (Currently Amended) The plant as claimed in claim 11, ~~characterized in that wherein~~ the gas supply system has at least one gas supply tube (3) which extends upwards substantially vertically from the lower region of the reactor (1) into a mixing chamber (7) of the reactor (1), the gas supply tube (3) being at least partly surrounded by an annular chamber in which the stationary annular fluidized bed (10) is formed.

13. (Currently Amended) The plant as claimed in claim 12, ~~characterized in that wherein~~ the gas supply tube (3) is arranged approximately centrally with reference to the cross-sectional area of the reactor (1).

14. (Currently Amended) The plant as claimed in ~~any of claims 11 to 13,~~ ~~characterized in that~~ claim 11, wherein the gas supply tube (3) has openings, for instance in the form of slots, at its shell surface.

15. (Currently Amended) The plant as claimed in ~~any of claims 11 to 14,~~ ~~characterized in that~~ claim 11, wherein a cyclone (9) for separating solids is provided downstream of the reactor (1), and ~~that~~ the cyclone (9) has a solids conduit (22) leading to the annular fluidized bed (10) of the reactor (1).

16. (Currently Amended) The plant as claimed in ~~any of claims 11 to 15,~~ ~~characterized in that~~ claim 11, wherein in the annular chamber of the reactor (1) a gas distributor (5) is provided, which divides the chamber into an upper fluidized bed region (10) and a lower gas distributor chamber (4), and ~~that~~ the gas distributor chamber (4) is connected with a supply conduit (6) for fluidizing gas.

17. (Currently Amended) The plant as claimed in ~~any of claims 11 to 16,~~ ~~characterized in that~~ claim 11, wherein the reactor (1) has a supply conduit for hydrogen-containing reduction gas, which leads to the gas supply tube (3) and is connected for instance with the exhaust gas outlet of a separator (27) of another reactor (23) downstream of the reactor (1), and/or has a supply conduit for preheated hydrogen-containing reduction gas, which leads to the annular chamber.

18. (Currently Amended) The plant as claimed in ~~any of claims 11 to 17,~~ ~~characterized in that~~ claim 11, wherein a preheating stage (12, 13, 14, 15) for the solids is provided upstream of the reactor (1).